

REMARKS

This Amendment responds to the Office Action dated July 26, 2005.

The Examiner rejected claims 9-15, 17-18, 20-28, 34, and 40 under 35 U.S.C. § 103(a) as being obvious in view of the combination of Amidei, U.S. Patent No. 5,995,661 and Kowalski, U.S. Patent No. 5,778,104. Amidei discloses a scanner that establishes a bounding region for scanning a document by first performing a low-resolution, 8-bit pre-scan of the document to detect intersecting vertical and horizontal edges of that document. *See* Amidei at col. 3 lines 6-12. Amidei discloses a processor that keeps track of the length of detected edges. *Id.* at col. 3 lines 27-30. Once all candidate edges are detected, the processor of Amidei selects the outermost edges with a sufficient length as being edges of the bounding regions, with the origin (0,0) used to complete the periphery of the bounding region. *See Id.* at col. 3 lines 17-22.

Kowalski, conversely, discloses a luminance filter specifically to be used to smooth a digital image that has text annotated over a natural image background (i.e. a picture). Thus, while each of the imaging processing steps disclosed by Kowalski might be appropriately used with respect to a *final* image scan of a document scanned by Amidei's scanner, assuming that the document had text overlaid on graphics, Kowalski's image processing filter would not be of any use during Amidei's *pre-scan* that determines edges of a bounding region. In fact, the specific image processing steps disclosed by Kowalski could not be used during the pre-scan because Kowalski's filter requires a higher resolution than that used in the Amidei's pre-scan, and also requires color information not present in Amidei's 8-bit grayscale conversion. *See* Kowalski at col. 3 lines 33-35 (stating that the disclosed filter is used to filter a color image); col. 4 lines 4-66 (disclosing that color information is used to calculate luminance values, which after filtering, are

used to calculate new color values); col. 3 lines 66-67 (stating that *each pixel of the image* is to be filtered, meaning that the low-resolution prescan, which does not include each image pixel, could not be used).

Amended independent claim 40, from which the remaining claims depend, includes the limitations of “a variable luminance threshold value calculated using a set of statistical measures” and “an image processor . . . that analyzes candidate edges for bounding regions and identifies edges cast by a shadow on said backing as edges of a bounding region.” Neither of these limitations would be obvious to one of ordinary skill in the art in view of the cited combination.

First, Amidei merely discloses fixed grayscale thresholds for detecting vertical and horizontal edges, respectively. *See* col. 4 lines 62-22 and col. 4 lines 58-62. Neither of these thresholds is disclosed to be variable and Amidei does not disclose using a statistical measure to calculate the threshold value. The Examiner cites Amidei’s disclosure that alternate thresholds may be used. This disclosure is irrelevant because Amidei never discloses the use of a variable threshold, instead using fixed thresholds. Moreover, the Examiner’s assertion that Kowalski discloses filter values using statistical information from neighborhood pixels is also irrelevant because Kowalski’s filter has no application to Amidei’s edge detection method. Kowalski merely discloses a filter that acts to smooth pictorial elements of an image while leaving overlaid text alone. *See* col. 4 lines 49-61. The Examiner has not explained how, if at all, the filter of Kowalski may be used to calculate the value of Amidei’s variable threshold.

Second, neither Amidei nor Kowalski disclose the limitation of “an image processor . . . that analyzes candidate edges for bounding regions and identifies edges cast by a shadow on said

backing as edges of a bounding region.” The Examiner points to Amidei at col. 2 line 66 to col. 3 line 1. This passage says nothing about detecting an edge cast by a shadow on a backing. The Examiner also asserts that it is well known in the art that a flatbed scanner casts a shadow on a backing. This may be true, but the claimed limitation is “identifies edges cast by a shadow on said backing as edges of a bounding region.” The fact that a flatbed scanner illuminates the document to be scanned, incidentally casting shadow on a backing, does not necessarily mean that the edges of that shadow on the backing are even detected by the scanner, let alone identified as edges of a bounding region. Amidei merely discloses the detection of the edges of *the document* as edges of the bounding region. *See* Amidei at col. That reference does not disclose detecting the edge of that document’s shadow on the backing as a bounding region.

For each of these reasons, independent claim 40, as well as claims 9-15, 17-18, 20-28, 34 are each patentably distinguished over the cited combination of Amidei and Kowalski and should be allowable. The applicant further notes that each of dependent claims 9-13 and 22-27 include additional limitations for which the Examiner’s rejection was improperly based upon an asserted unrelated combination of Kowalski’s color filter techniques and Amidei’s edge detection method.

The Examiner rejected claims 2 and 3 in view of the combination of Amidei, Kowalski, and Lee, U.S. Patent No. 5,054,098. The Examiner rejected claims 4-8 under 35 U.S.C. § 103(a) as being obvious in view of the above combination and in further view of Yamanishi, U.S. Patent No. 5,696,595. Each of the rejected claims depends from independent claim 40 and are patentably distinguished over the respective combinations recited for the same reasons as independent claim 40, i.e. none of the cited references disclose the limitations of of “a variable

luminance threshold value calculated using a set of statistical measures” and “an image processor . . . that analyzes candidate edges for bounding regions and identifies edges cast by a shadow on said backing as edges of a bounding region.”

The applicant has amended claim 24 to recite the additional limitation of “wherein said threshold value varies with the size of the object being imaged. This limitation is not disclosed by any of the cited combinations.

In view of the foregoing amendments and remarks, the applicant respectfully requests reconsideration and allowance of claims 2–15, 17, 18, 20–28, 34 and 40.

Respectfully submitted,



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